What is claimed is:

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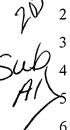
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1. An electronic structure comprising

a substrate having a dielectric layer having a via opening therein; having sidewalls and bottom surfaces:

a barrier layer deposited on the sidewalls and bottom surfaces of the via opening; and copper electrodeposited from a bath having a pH of about 12.89 or greater on the barrier layer on the sidewalls and bottom surfaces of the via opening.

- 1 2. The structure of claim 1 wherein the thickness of the copper is about 10 nanometers
- 2 to about 100 nanometers.
- 1 3. The structure of claim\1 wherein the thickness of the copper is about 20 to about 50
- 2 nanometers.
- 1 4. The structure of claim 1 wherein the barrier layer is selected from the group
- 2 consisting of tungsten, titanium, tantalum, nitrides thereof, silicon nitrides thereof and alloys
- 3 thereof.
- 1 5. The structure of claim wherein the barrier layer having thickness of at least about 4
- 2 nanometers.
- 1 6. The structure of claim 1 wherein the dielectric layer comprises silicon dioxide.
- 7. The structure of claim 1 wherein the via opening has an aspect ratio of greater than
- 2 3:1.
- 1 8. The structure of claim 1 wherein the barrier layer comprises tungsten.
- 1 9. The structure of claim 1 wherein a free of a seed layer between the barrier layer and
- 2 copper.



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10. A method of fabricating an electronic structure which comprises forming an

insulating material on a substrate; lithographically defining and forming recesses for lines

and/or via having sidewalls and bottom surface in the insulating material in which

interconnection conductor material will be deposited;

depositing a barrier layer on sidewalls and bottom surfaces of the recesses;

depositing copper on the barrier layer by electroplating from a both having a pH of

about 12.89 or greater, a source of cupric ions and a complexing agent and at a current

8 density of about 5 to about $25\mu\text{A/cm}^2$.

1 11. The method of claim 10 wherein the copper is deposited to provide a thickness of

2 about 10 nanometers to about 100 nanometers.

1 12. The method of claim 10 wherein the copper is deposited to provide a thickness of

2 about 20 to about 50 nanometers.

1 13. The method of claim 10 wherein the barrier layer is selected from the group

2 consisting of tungsten, alloys of tungsten, titanium, alloys of titanium, titanium nitride,

3 tantalum, tantalum nitride and tantalym silicon nitride.

14. The method of claim 10 wherein the barrier layer has a thickness of at least about 4

nanometers.

15. The method of claim 10 wherein the barrier layer is tungsten.

1 16. The method of claim 10 wherein the dielectric is silicon dioxide.

1 17. The method of plaim 10 wherein the recess has an aspect ratio of greater than 3:1.

18. The method of claim 10 wherein the electroplating bath is at a room temperature of

2 about 22° C.

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- 19. The method of claim 10 wherein the source of cupric ions is CuSO₄, and the complexing agent is EDTA of salt of thereof..
- 1 20. The method of claim 19 wherein the electroplating bath comprises sodium
- 2 hydroxide or potassium hydroxide.

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- 21. The method of claim 10 wherein the electroplating bath further comprises a stabilizer and surfactant.
- 22. The method of claim 21 wherein the stabilizer is 2,2' -bipyridyl.
- 1 23. The method of claim 10 wherein the plating bath further comprises cyanide ions.

1 24. An aqueous copper plating bath comprising a source of cupric ions and a

- 2 complexing agent, having pH at least 12.89 and a deposition rate of at least 15 μA/cm².
- 1 25. The plating bath of claim 24, wherein the source of cupric ions is CuSO₄ and the
- 2 complexing agent is EDTA or salt of thereof.
- 1 26. The plating bath of claim 24 which further comprises sodium hydroxide.
- 1 27. The method of claim 25 wherein the electroplating bath further comprises a
- 2 stabilizer and surfactant
- 1 28. The structure obtained by the method of claim 10.

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